

## 10. The State as Energy User

### 10.1 The State's Energy Needs

The government agencies of the State of New Hampshire are the largest energy user in the state. The State, through its three branches of government, occupies roughly 1,250 structures, ranging from small transportation sheds to large office buildings. These structures total almost 9.2 million square feet.

These State facilities and the thousands of employees who work in them consume significant amounts of energy. In fiscal year 2000, the State of New Hampshire spent the following on energy:

**Table 10.1 Energy Type & Expense**

Energy Type	Expense
Diesel (generators) .....	\$ 81,228
Electricity .....	\$11,427,402
Fuel Oil .....	\$ 2,438,059
Natural Gas .....	\$ 722,248
Propane .....	\$ 347,876
Steam .....	\$ 1,530,338
<b>Total .....</b>	<b>\$16,547,151</b>

While the State spent over \$16.5 million on energy for buildings, including over \$11 million on electricity, there is insufficient information available on the specifics of how the State uses this energy. Many State agencies do not specifically track energy use, and agencies that do track use are not reporting it in a manner that would allow for systematic analysis. Because of this, the State does not know some basic facts about its energy consumption. For example, the State knows how much money was spent on electricity for FY 2000, but does not know how many kilowatt-hours this use represents. Similar problems with insufficient baseline information exist for other types of energy use. Development of a system of standardized and consistent energy use tracking is critical to future State efforts to manage its energy use.

## 10.2 Energy Use at State Facilities

Efficient use of energy at State facilities, both today and in the future, is an energy priority of state government. There are a variety of ways this goal is being achieved, primarily through institution of a State Energy Manager and the Building Energy Conservation Initiative, detailed below.

### 10.2.1 State Energy Manager

In recognition of the need for state government to manage its energy use, the position of State Energy Manager was created in 2001. The State modeled this position on the private sector, as most large corporate organizations have one individual that oversees energy use throughout a company.

The primary responsibility of the State Energy Manager is to serve as a “change agent” within state government, changing how the State plans for, purchases, and consumes energy. The State Energy Manager works with all State agencies to develop policies and procedures that increase the efficiency, reduce the cost, and account for environmental impacts of State energy use, including:

- Working with the Department of Administrative Services, the Department of Environmental Services, and Department of Transportation to ensure that all State buildings incorporate energy efficiency, and that “life cycle costing” is implemented to reduce long-term ownership costs;
- Developing operating and maintenance guidelines that ensure that State facilities will be operated and maintained in an energy efficient manner;
- Following the development of emerging energy technologies that can reduce energy costs at State facilities, and keeping others in state government aware of opportunities to use these emerging technologies;
- As utility restructuring proceeds, aiding in the development of contracts that assure reliable energy supplies while keeping costs low; and
- Serving as the “focal point” for an ongoing energy awareness program for all State agencies and their personnel, including outreach and workshops targeted at agency personnel that are responsible for the operation and maintenance of State facilities.

As a large energy user, the State has the opportunity to achieve significant savings in energy costs. Based on experience in the private sector, a mature and well-managed energy program can generate savings of between 5% and 10%. With energy bills totaling \$16.5 million for fiscal year 2000, the State could realize savings of \$825,000 to \$1.6 million annually if we implement new policies, procedures and methodologies to manage our energy use.

The State Energy Manager has already enjoyed some significant successes in helping the State manage its energy needs, with more anticipated in the near future. The State is now in the process of fundamental changes in the way new buildings are designed, including accounting for all costs and savings over the lifetime of a building instead of designing for lowest initial cost only. Once fully implemented this will help reduce State energy costs for decades to come. Personal computers, which are used at all levels of state government, will soon be managed by a power management system, ensuring that computers conserve power when not in active use. As the State Energy Manager becomes more known and accepted in state government, this position will continue to identify and propose policies that will responsibly manage the State's energy consumption.

### **10.2.2 Building Energy Conservation Initiative (BECI)**

The Building Energy Conservation Initiative (BECI) is a program designed to cut energy and water costs in more than 500 State buildings, resulting in savings of up to \$4 million annually through building upgrades and retrofits. Established in 1997 by Governor Shaheen and authorized by NH RSA 21:1-19, BECI analyzes existing State buildings for energy and resource conservation opportunities. BECI utilizes a "paid from savings" procedure known as "performance contracting" that allows current energy efficiency upgrades to be financed with future utility savings. This allows State agencies to perform energy retrofits and building upgrades that would otherwise not be funded through the capital appropriations process, using energy savings to pay back the cost.

BECI is designed specifically for energy improvement, including but not limited to lighting upgrades, heating / ventilation / air conditioning (HVAC) upgrades, hot water systems, energy management controls, water conservation measures and building envelope improvements. Under this program, a private Energy Service Company (ESCO) is selected through a competitive process to design and implement energy saving improvements to selected State buildings. Energy savings are guaranteed by the ESCO, and costs are repaid over time with money the State otherwise would have paid in utility and other energy costs.

BECI requires that energy savings pay for a project within ten years. To date, two projects encompassing five buildings have already resulted in over \$250,000 in annual energy savings to the State. BECI has been recognized by the U.S Environmental Protection Agency as a model for other states.

### **10.2.3 Energy Information System**

Twenty-six separate units of State government, including agencies, bureaus, commissions and boards, are individually responsible for managing their own energy use. Facility operating expense invoices are received by each of the managing agencies at multiple processing offices around the state. Utility companies generally do not distinguish State facilities from other customers because account numbers are designed to facilitate response to outages or interruptions in service, not aggregate usage information. The State's ability to assemble utility account numbers is also limited by the sheer volume of the accounts. Without an understanding of the numbers, types, ages, locations or operating characteristics of State buildings, our ability to plan for energy efficiency improvements is hampered.

As the electric and natural gas markets continue to restructure, opportunities for large energy users like the State to acquire energy supply cost savings will increase. Our ability to take advantage of these opportunities requires the development of new managerial skill sets and a consolidation of energy information. Understanding our needs, usage levels and timing is essential to managing a reasonably stable energy consumption profile within a competitive market.

The State is in the process of developing an "Energy Information System" (EIS) that will help address some of these upcoming opportunities. An EIS is a systematic approach to energy accounting, where data collected is used to manage energy consumption and associated costs at State facilities. In essence, an EIS is a database that will place all State energy consumption in one centralized database. Developing and implementing an EIS will allow the State to budget for energy consumption more accurately, identify any problems with energy use in State buildings, take advantage of market opportunities to lower energy costs, prioritize energy-efficiency investments, and evaluate energy use over time.

## **10.3 Energy Use in Transportation**

As noted in Chapter 3, energy use in transportation is a significant portion of New Hampshire's energy consumption. While the New Hampshire Energy Plan does not focus on energy use in transportation, the opportunities to find efficiencies or pollution reductions in this sector cannot be ignored. Because state government relies heavily upon transportation to conduct its business, there are opportunities to evaluate and improve upon the State's use of energy in transportation.

### **10.3.1 Transportation in Energy Planning**

The New Hampshire Department of Transportation (NHDOT) has the statutory responsibility to plan for the State's transportation needs (NHRSA 228:99). This planning deals primarily with the infrastructure necessary to support improvements to New Hampshire's intermodal transportation system. In

December of 2001, NHDOT completed a ten-year transportation plan, covering the years 2003 through 2012. The New Hampshire Legislature approved this transportation plan during the 2002 Session (HB2002). While the transportation plan is not designed to focus on energy issues, it does provide a blueprint for some changes to our current transportation system that would improve energy efficiency, including an increased focus on the importance of public transit, a discussion of the role that “Park and Ride” lots play in encouraging carpooling, and a recognition of the importance of rail for only passengers and for freight service in some parts of the state. The transportation plan is updated on a biannual basis, allowing it to consistently address the transportation needs of the state.

### 10.3.2 Alternative Fuel Vehicles in the State Transportation Fleet

One area where the State has enjoyed success is in the use of alternative fuel vehicles (AFVs) to provide for State transportation needs. In addition to use by State officials, some municipalities, educational institutions, corporate fleets and individuals are using AFVs to meet transportation needs. The primary alternative fuels used in New Hampshire include natural gas, liquefied petroleum gas (propane), biodiesel, and electricity.

Federal laws mandate states incorporate Alternative Fuel Vehicles (AFVs) into their existing fleets to reduce the negative impact transportation has on air quality. The passage of the Energy Policy Act (EPAAct) in 1992 established a timeline as well as targets that state fleets must meet.

The requirements outlined in EPAAct were designed to promote the use of non-petroleum fuels, such as ethanol, methanol, natural gas, propane, hydrogen, and electricity in order to reduce U.S. dependence on foreign oil. Aside from the substantial clean air benefits of these fuels, they are also produced domestically, strengthening America’s energy independence.

**Table 10.2. EPA Fleet Requirements**

<b>EPAAct Requirements for State Fleet*</b>	
<i>Light Duty (8,500 lbs. or less) Only</i>	
<b>Model Year</b>	<b>Compliance (% new purchases)</b>
1999 .....	25%
2000 .....	50%
2001 .....	75%
2002 .....	75%
* “State Fleet” is defined as more than 50 vehicles, or 20 vehicles located within a metropolitan area of 500,000 or more people.	

### **10.3.1.1 State Alternative Fuel Vehicle Project**

In June of 1996, the New Hampshire Governor's Office of Energy and Community Services (ECS) received a Congestion Mitigation and Air Quality Improvement (CMAQ) grant to establish a State fleet of alternative fueled vehicles and develop a network of refueling stations. The Alternative Fuel Vehicle Project (AFVP) was established to facilitate this grant. The AFVP managing group consists of participants from ECS, the New Hampshire Department of Environmental Services (DES) and the New Hampshire Department of Transportation (DOT). Through this group's efforts, a fleet of vehicles powered by electricity (EV), propane (LPG) and compressed natural gas (CNG) was procured for various State agencies. These vehicles are used as standard, State fleet vehicles while serving as educational tools that highlight and demonstrate clean transportation technology. To date, the number of State-owned vehicles that have displaced those running on conventional fossil fuels are 16 EVs, 1 van running on LPG and 17 CNG vehicles.

The State has also purchased 42 flexible fuel vehicles, which can run on a combination of fuels. These vehicles can run on conventional gasoline or a blend of ethanol and gasoline mixed at a rate of 85:15 (E85). Currently, there is no ethanol refueling capability in all of New England so these vehicles have been running on gasoline. The nearest E85 refueling stations are in New York, Ohio and Virginia.

As part of the AFVP, a fast fill CNG refueling station was built and placed into operation at a NH DOT facility in the city of Concord, and three slow fill CNG stations have been installed in other locations around the state. In addition, 13 Electric Charging stations/outlets have been installed at various State agencies to support the fleet of EVs. In February 2000, the AFVP requested and received additional CMAQ grant money to purchase more dedicated AFVs within the State fleet while maintaining the existing infrastructure.

### **10.3.1.2 Granite State Clean Cities Coalition**

Clean Cities is a national program sponsored by the U.S. Department of Energy designed to encourage the use of Alternative Fuel Vehicles (AFVs) and to build the supporting infrastructure throughout the country. By encouraging AFV use, the Clean Cities program will help achieve energy security and environmental quality goals at both the national and local levels. Unlike traditional regulatory programs, the Clean Cities program takes a unique voluntary approach to AFV development, working with coalitions of local stakeholders to help develop the AFV industry and integrate this development into larger planning processes.

The Granite State Clean Cities Coalition plans and implements projects that promote the use of alternative fuel vehicles to improve air quality, increase our energy security by decreasing dependence on foreign oil, and foster sustainable economic development in this emerging industry. Diverse stakeholders include DES, ECS, DOT, the cities of Durham, Keene, Manchester, Nashua, Portsmouth, colleges and universities, energy companies, environmental organizations, auto manufacturers, transit systems, and private transportation companies such as limousine services. The Coalition has been recognized as a model for other states, and is a critical component of New Hampshire's ability to decrease and diversify our use transportation fuels, which is one of our fastest growing uses of energy. More information is available at the Coalition's website, [www.granitestatecleancities.org](http://www.granitestatecleancities.org).

## **10.4 Opportunities for Improving the State's Energy Use**

As a large energy user in its own right, and as a source of funding for municipalities and organizations around New Hampshire, the State has an opportunity and obligation to serve as a leader in the efficient use of energy. While a number of programs and activities have been developed to manage energy use by the State, there are opportunities to build upon these efforts and increase the effectiveness of this work. In addition to saving taxpayer money through better use of energy, the State can play a leadership role that will impact energy use by others. By piloting programs and sharing the results with others, the State is in a unique position to demonstrate the effectiveness of energy management on financial savings and environmental impact. By helping build infrastructure that others may use, the State can provide the building blocks necessary for increased private sector and municipal sector investments in responsible energy use.

### **10.4.1 Renewable Power Purchasing by the State**

The State of New Hampshire has the ability to significantly impact the electricity market through its purchasing decisions. In a restructured marketplace with customer choice, one way the State can encourage environmentally responsible power is to purchase electricity generated from renewable sources. By insisting that some percentage of the electricity that the State uses comes from renewable sources, the State can help create a market for renewable power.

Around the country, states and local governments have used their market power to purchase renewable power. The table below shows the steps state governments in areas with a restructured electricity market are taking to purchase renewable power.



**Table 10.2. Renewable Power Purchasing Policies in Restructured States**

State or City	% Renewable Power	Date Effective	Notes
Illinois	5%	2010	Increases to 15% of electricity purchases by 2020
Maryland	6%	2001	
New Jersey	12%	2002	Purchase of roughly 113 million kwh
New York	10%	2005	Increases to 20% by 2010
Tennessee	720,000 kwh/yr	2002	Purchase of renewable power for State facilities in Nashville only

New Hampshire should consider purchasing a fixed percentage of its power from renewable generation. Doing so will not only demonstrate the commitment of State government to using its market power to encourage environmentally responsible electricity generation, it will serve as an example for others. By assuring a market for some baseline level of renewable power, the State will encourage electricity suppliers to develop renewable power options available to other customers as well. The State could leverage its power in the marketplace through this method, and help create a market for renewable power at levels above what is generally offered.

It is expected that the purchase of renewable electricity will cost more than the purchase of fossil fuel power, and the State should obviously consider this increased cost when weighing what percentage of power to purchase from renewable generation. However, as a leader in environmental responsibility and a major consumer of electricity, the State should not miss this opportunity to use market-based, non-regulatory power to help shape New Hampshire's competitive electricity market.

### **10.3.2 Improvements in New Construction to Increase Energy Efficiency**

As the State constructs new buildings or conducts substantial renovation of existing buildings to meet the needs of government, every effort should be made to fully account for the "life-cycle" cost of the building, and not simply the initial cost. Instead of considering only the cost of design and construction when costing a building, life-cycle accounting considers the long-term energy, maintenance, and other costs that are traditionally considered "operating expenses." It is often true that failure to make modest investments at the time of construction in order to keep a building's construction budget low results in inflated long-term expenses. This is particularly true of investments in energy efficiency, which may carry a



higher initial cost but quickly pay for themselves through energy savings. By considering the “life-cycle” approach to building design, the State will position itself to reduce overall expenses associated with its new construction and reduce long-term energy use.

The State should also consider incorporating “performance contracting” (see BECI information, section 10.2.2) into new building construction. Performance contracting is a mechanism through which an Energy Service Company (ESCO) implements cost-saving building improvements. Unlike the traditional contracting process, the performance contractor assumes project performance risk to guarantee to the building owner (State) that energy savings will be sufficient to pay for the project costs. In basic terms, this is a “paid from a savings” program, so that no increase in up-front capital costs is required to implement energy cost saving measures in State buildings.

### **10.4.3 State Purchases of Energy Star® Office Equipment**

In order to reduce energy costs and promote the importance of individual and corporate actions to reduce energy use, the State should commit to purchasing office equipment that achieves an Energy Star® rating. Energy Star® is a program that identifies products that meet or exceed premium levels of energy efficiency, making it easier for consumers to identify the most energy-efficient products in the marketplace. By purchasing and using products that meet the Energy Star® standard, and assuring that the energy efficient features are utilized, the State can achieve meaningful energy savings. According to estimates prepared for the New England Governor’s Conference (NEGC), upgrading computers, copiers, printers, fax machines and scanners used by New Hampshire State agencies would result in annual energy savings of almost \$70,000 and an annual reduction in carbon emissions of 1.2 million tons. This recommendation supports actions being taken by New England Governors and Eastern Canadian Premiers, coordinated by the New England Governor’s Conference. At its August 2002 meeting, the NEGC/ECP approved a resolution that included implementing Energy Star® purchasing programs in the member states and provinces in order to achieve emission reductions and climate change policies and agreements.<sup>1</sup>

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<sup>1</sup> More information on the NEGC/ECP initiatives is available at [www.negc.org](http://www.negc.org).

<sup>2</sup> The Sustainable Buildings Industry Council (SBIC) is a SBIC is a nonprofit organization whose mission is to advance the design, affordability, energy performance, and environmental soundness of residential, institutional, and commercial buildings nationwide. Resources are available at [www.sbicouncil.org](http://www.sbicouncil.org).

<sup>3</sup> See [www.h-m-g.com](http://www.h-m-g.com) for information on the Heschong Mahone study on the impacts of daylighting on classroom performance.

#### **10.4.4 State Purchases of “Green Cars”**

In addition to the use of alternative fuels to power the State’s fleet of vehicles, (see 10.2.3 above), New Hampshire should strive for the most efficient use of fuel in vehicles that use traditional fuel, primarily gasoline. One way to encourage this is to have State purchases passenger vehicles that qualify for the New Hampshire Department of Environmental Service’s “Green Label” designation. This designation, reserved for passenger vehicles that achieve 30 miles per gallon or better and meet a low-emission vehicle (LEV) standard, was developed in partnership with the New Hampshire Auto Dealers Association to provide information to consumers. When such vehicles meet the needs of the agency purchasing the vehicle, the State should direct purchases toward these clean and efficient vehicles. The State should also expand its efforts to purchase “hybrid” vehicles, which combine traditional internal combustion engines with electric car technology to achieve great fuel efficiency. The purchase of passenger vehicles meeting the “green label” requirements will not only produce fuel cost savings over time, it will also reduce emissions and help support the market for efficient vehicles.

This recommendation also supports the recent actions being taken by New England Governors and Eastern Canadian Premiers, coordinated by the New England Governor’s Conference. At its August 2002 meeting, the NEGC/ECP approved a resolution that included implementing policies that promote the use of clean, energy efficient state fleet vehicles in the member states and provinces in order to achieve emission reductions and climate change policies and agreements.

#### **10.4.5 Increasing Biodiesel Use by the State of New Hampshire**

The State of New Hampshire owns roughly 1,500 trucks, many of them diesel. These diesel trucks are used by the State for a variety of functions, primarily public works and transportation. These State vehicles use roughly 2.2 million gallons of diesel fuel annually.

Biodiesel is a diesel replacement fuel made from virgin vegetable oils such as soybeans, rapeseed, or recycled restaurant oils. Biodiesel has some significant advantages over diesel when it comes to emissions. Because it is 11% oxygen by weight and contains no sulfur, sulfur emissions, the chief cause of acid rain, are eliminated. According to EPA, biodiesel lowers emissions of toxins and particulate matter by 30%, although it has been demonstrated to have NOx emissions roughly 10% higher than conventional diesel. Derived from renewable resources such as crops, pure biodiesel is carbon-neutral, making it an attractive option for lowering emissions of carbon dioxide.

One of the great benefits of biodiesel is that it can be used in existing diesel vehicles, without any modifications to the diesel engine. This is in contrast to other emerging diesel technologies (often referred to as “clean diesel”), which require costly modifications to engines and emissions treatment systems, but yield even better emissions reductions.

The City of Keene, Keene State College, and the City of Nashua are currently implementing biodiesel trials, where the fuel will be used in some heavy-duty vehicles. This will help determine the fuel's ability to be used successfully in New Hampshire, and should help provide valuable information on fuel storage and handling, cold weather operations, and fuel efficiency.

Other states and regions have taken steps to decrease diesel emissions from their state fleets or vehicles working on their behalf, including:

- Starting in 2005, Minnesota requires that all diesel fuel sold in the state, whether for State or private use, contain at least 2% biodiesel. State agencies are required to use “clean fuels”, including biodiesel blends of 20% or greater by volume, in their vehicles when available at similar costs to diesel.
- In Nebraska, the Transportation Services Bureau has established a goal of having 50% of its fleet run on alternative fuels, including biodiesel, by 2010, and it is anticipated that 100% of the fleet, including heavy construction vehicles, shall run on alternative fuels by 2025.
- Regulators in New York State have required retrofits to diesel vehicles working on the reconstruction of Lower Manhattan following the terrorist attacks of September 11. Because of the heavy influx of diesel vehicles involved in the reconstruction, State regulators took this step to help reduce air pollution in this heavily populated area.

New Hampshire can take a leadership role in the use of biodiesel in State vehicles. By doing so, the State will be helping to reduce emissions of sulfur, particulate matter and other harmful pollutants. Increased use of biodiesel will also reduce dependency on imported fossil fuels, and support a market for agricultural products. If the pilot projects in Keene and Nashua provide positive results, the State should seriously consider transitioning to biodiesel in all of its diesel fleet, including passenger vehicles, trucks, and mobile generators.

Eventually, the State may wish to consider requiring contractors working on State projects using State funds to use some level of biodiesel in vehicles, mobile generators and other diesel-powered devices. These requirements should be carefully considered to allow contractors a choice of fuels when not working on State projects, and biodiesel provides this opportunity – something other alternative fuels may not. The State may also wish to set a high threshold for project size before requiring use of biodiesel, initially targeting only those projects with the greatest opportunity for emissions reduction or that are located in sensitive air quality areas.

#### **10.4.6 College/University Partners in Energy Efficiency and Renewables**

New Hampshire is home to some of the top secondary educational institutions in the country, and the State university system is one of the largest users of energy in the State system. ECS currently works with the state universities to encourage investments in energy efficiency and renewable energy to allow these institutions to realize the economic, energy, environmental and educational benefits of these technologies.

For example, the University of New Hampshire campus in Durham was recognized by the U.S. Department of Energy in 2002 for being among the top 5% of research universities nationally for its efficient use of energy. UNH is eager to share its successes and strategies with others seeking to reduce energy use, save money, and improve environmental quality.

In support of the recent resolution approved by the New England Governors and Eastern Canadian Premiers, coordinated by the New England Governor's Conference, the State should take a leadership role in working with colleges and universities to promote energy efficiency and renewable energy technologies. The project approved by the NEGC/ECP encourages the region's colleges and universities to help states and provinces to meet climate change reduction goals, working within their own institutions to reduce greenhouse gas emissions to 10% below 1990 levels by 2012. This effort would serve three purposes: it would expand the number of entities starting to reduce their pollution through energy efficiency and renewables, it would serve as an educational tool for educating students about climate issues; and it could focus student research on finding innovative and creative solutions for making these reductions.

#### **10.4.7 Using School Building Aid to Increase Energy Efficiency**

The State of New Hampshire invests between \$25 and \$30 million dollars each year in new school construction through direct aid to school districts. At present, school building aid requires that new construction or renovation comply with the State's energy code. Districts meet this standard by having their architect self-certify that the building meets the State's energy code. This code, while providing a minimum baseline for energy efficiency, does not incorporate some of the best practices and new design ideas that encourage truly energy efficient building design.

State aid for school construction provides an opportunity for the State to be a partner in new construction of schools, and to help school districts go beyond the code and realize the benefits of high performance schools, including lower operating costs, higher test scores, and better land use practices. "High performance school buildings" are schools that integrate healthy and productive learning space with energy efficiency, lower operating costs, and result in lower environmental impacts.<sup>2</sup> High performance

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<sup>4</sup>The GGGC has developed a High Performance Green Building Guidelines book, and provides resources and guidance on how to build green buildings in the state. More information on Pennsylvania's Governor's Green Government Council may be found at [www.gggc.state.pa.us](http://www.gggc.state.pa.us).

schools benefit students, teachers and taxpayers by providing an integrated approach to school design.

Recent studies have shown a correlation between building design, learning success, and health. For example, in a study of three western states, students in environments with increased daylighting (natural light) performed better on standardized tests than students with the least amount of daylight in their classrooms. By providing students and teachers with superior indoor air quality, students and teachers take fewer sick days. Through design features and ventilation and building materials, schools can reduce sources of health problems and limit the spread of infections. With a healthy work environment, school districts can see tangible improvements in attracting and retaining teaching staff.<sup>3</sup>

High performance school buildings are less expensive to maintain, which means a reduction in the life-cycle costs of the facilities, providing taxpayers with the most efficient use of their money. Several states are already seeing the benefits of saving limited state resources by building green schools. In Pennsylvania, the Governor's Green Government Council (GGGC) is working with the real estate, architecture and building industries and school districts to help make school buildings better places to learn with lower operating costs.<sup>4</sup> California, through the Collaborative for High Performance Schools, is working to increase the energy efficiency of schools in California by providing information, services, and incentive programs directly to school districts and designers.<sup>5</sup>

In order to ensure that New Hampshire students and taxpayers realize the many economic and environmental benefits of high performance schools, the State should continue to work with schools and municipalities to provide information on the benefits, both educational and financial, of high performance building design. Part of this effort should focus on conducting and evaluating demonstration projects in New Hampshire, and sharing the results of these demonstration projects. In addition, the State should explore ways to use funding mechanisms available to it, including school building aid, to encourage the construction of high performance schools in New Hampshire. By utilizing this approach, the State can have more schools that are energy efficient, less expensive to operate, better places to learn, and have less impact on the environment.

ECS actively works with schools and municipalities to accomplish these goals through Rebuild NH, but more resources and coordination with other State agencies should be devoted to this effort. Rebuild is a federal Department of Energy program that provides technical assistance on energy efficiency and energy management directly to municipalities and school districts. The Rebuild NH network of municipal, school, and building professionals provides a solid foundation to advance green schools initiatives, and serve as the foundation for a high performance school building program in New Hampshire.

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<sup>5</sup>The Collaborative's goal is to facilitate the design of high performance schools, which are more cost-effective, energy efficient, and a healthier environment to provide a quality education. For more information see [www.eley.com/chps](http://www.eley.com/chps).

#### **10.4.8 LED Traffic Light Project**

It is now widely recognized that simply changing traffic lights from incandescent bulbs to light emitting diode (LED) technology results in significant energy savings and pollution reductions, using 85% less energy than conventional traffic lights. As a result, the State should work to implement the project approved by the the New England Governors and Eastern Canadian Premiers, coordinated by the New England Governor's Conference, to replace these lights throughout the region by 2007. NEGC/ECP has found that making these changes will result in reductions totaling 1120.9 pounds of CO<sub>2</sub>/yr. per light and would save roughly \$58.40<sup>6</sup> per light, each year. In addition, this project will also reduce labor costs associated with the current lights that require more frequent replacement. Further, the new lights tend to enhance public safety because they are more reliable, reducing the problems that occur when incandescent lights burn out prematurely and signal systems fail.

New Hampshire should continue to work with the NEGC and our neighboring states in the region to implement this and the other initiatives approved by the NEGC/ECP in August 2002.<sup>7</sup>

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<sup>6</sup>Based upon 15-20 watts per light versus 100, .36-.48 kWh vs. 2.4 kWh, roughly \$.08 per kWh, \$14.016/year vs. \$70.08/year.

<sup>7</sup>More information on these initiatives is available at [www.negc.org](http://www.negc.org)